

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of ) Group Art Unit:  
 )  
 5 Robert Malcolm Watson, Jr. et al. ) Examiner:  
 )  
 Serial No. )  
 ) **PRELIMINARY AMENDMENT**  
 Filed: )  
 10 ) 260 Sheridan Ave., Suite 420  
 For: **Biochip Detection System** ) Palo Alto, CA 94306  
 ) (650) 833-0160

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Assistant Commissioner for Patents  
 Washington, D.C. 20231

15 Sir:

Prior to the examination of the instant application on its merits, please enter the amendments as follows:

IN THE DRAWINGS:

20 Please substitute the attached six sheets of formal drawings, including Figures 1-8, for the original drawing sheets.

In the Specification:

On page 1, line 2, after the title "**Biochip Detection System**" and before the paragraph entitled "BACKGROUND OF THE INVENTION", please insert the following paragraph:

25 --RELATED APPLICATION(S)

This application is a continuation application of the co-pending Patent Application Serial Number 09/140,164 filed August 26, 1998.--

**Amended Clean Version of the Claims**

1 1. (Canceled)

1 2. (Canceled)

1 3. (Canceled)

1 4. (Canceled)

1 5. (Canceled)

1 6. (Canceled)

1 7. (Canceled)

1 8. (Canceled)

1 9. (Canceled)

1 10. (Canceled)

1 11. (Canceled)

1 12. (Canceled)

2

3 13. (Canceled)

1 14. (Canceled)

1 15. (Canceled)

1 16. (Canceled)

1 17. (Canceled)

1 18. (Canceled)

1 19. (Canceled)

1 20. (New) An apparatus comprising:

- 2 a. means for supporting a first biochip comprising a first array of samples;
- 3 b. means for generating excitation light to irradiate the first array of samples;
- 4 c. means for selecting excitation light having a first excitation wavelength; and
- 5 d. means for selecting a first emission wavelength emitted from a portion of the
- 6 array of samples resulting from irradiating the first array of samples with
- 7 excitation light having the first wavelength; and
- 8 e. means for detecting the first excitation wavelength from the first portion of the
- 9 first array of samples.

- 1 21. (New) The apparatus of claim 20, wherein the means for selecting a first emission  
2 wavelength comprises a sensor matched filter in an optical path between the means for  
3 detecting and the means for supporting the first biochip.
- 1 22. (New) The apparatus of clam 20, wherein the means for selecting excitation light having  
2 a first excitation wavelength is a light source matched filter optically coupled between the  
3 means for generating excitation light and the means for supporting.
- 1 23. (New) The apparatus of claim 20, further comprising a main housing for optically  
2 isolating the first biochip and the means for selecting excitation light.
- 1 24. (New) The apparatus of claim 23, further comprising a camera housing for holding the  
2 means for detecting, the camera housing being configured to couple to the main housing  
3 with the means for detecting positioned in an optical path between the means for selecting  
4 the first emission wavelength and the means for supporting.
- 1 25. (New) The apparatus of claim 24, wherein the camera housing is configured to house the  
2 means for selecting the first emission wavelength.
- 1 26. (New) The apparatus of claim 20, wherein the means for generating excitation light to  
2 irradiate the first array of samples comprises a fiber optic cable.
- 1 27. (New) The apparatus of 26 wherein the means for generating excitation light further  
2 comprises a laser.

- 1 28. (New) The apparatus of claim 26, further comprising a main housing for optically  
2 isolating the first biochip, the housing comprising a fiber optic port for directing the fiber  
3 optic cable through the housing.
- 1 29. (New) The apparatus of claim 26, wherein the fiber optic cable is configured to couple to  
2 single source board spectrum light source.
- 1 30. (New) The apparatus of claim 20, wherein the means for supporting the first biochip is a  
2 movable drawer structure.
- 1 31. (New) The apparatus of claim 30, wherein the movable drawer structure is configured to  
2 hold a second biochip comprising a second array of samples.
- 1 32. (New) The apparatus of claim 20, wherein the means for selecting excitation light is  
2 configured for selecting excitation light having a second excitation wavelength to  
3 irradiate the first array of samples with a second excitation wavelength and wherein the  
4 means for selecting the first emission wavelength is also configured for selecting a second  
5 emission wavelength emitted from a second portion of the first array of samples.
- 1 33. (New) The apparatus of claim 32, wherein the means for generating excitation light is a  
2 single source board spectrum light source for simultaneously providing the first excitation  
3 wavelength and the second excitation wavelength.
- 1 34. (New) The apparatus of claim 20, wherein the means for detecting comprises a two-  
2 dimensional charge coupled sensor.

1 35. (New) The apparatus of claim 20, wherein the means for selecting excitation light having  
2 a first excitation wavelength comprises a light source filter in an optical path between the  
3 means for generating excitation light and the means for supporting.

1 36. (New) The apparatus of claim 35, wherein the light source filter is a filter wheel for  
2 selecting a second excitation wavelength.

1 37. (New) The apparatus of claim 20, further comprising a lens positioned in an optically  
2 path between the means for detecting and the means for supporting.

1 38. (New) The apparatus of claim 37, wherein the lens is an adjustable lens to adjust the area  
2 of the biochip detected by the means for detecting.

1 39. (New) The apparatus of claim 20, wherein the means for selecting a first emission  
2 wavelength comprises a sensor filter positioned in an optical path between the means for  
3 detecting and the means for supporting.

1 40. (New) An apparatus comprising;  
2 a. a support for holding at least one biochip having a two-dimensional array of tag  
3 labeled samples;  
4 b. means for selectively transmitting excitation light to the two-dimensional array of  
5 tag labeled samples, the means for selectively transmitting excitation light having  
6 a first excitation wavelength and a second excitation wavelength; and  
7 c. means for selectively detecting emission light having a first emission wavelength  
8 and a second emission wavelength emitted from a first portion and a second  
9 portion of the two-dimensional array of tag labeled samples.

10 41. (New) The apparatus of claim 40, wherein the means for selectively transmitting  
11 excitation light comprises a broad spectrum light source capable of emitting light having  
12 the first excitation wavelength and the second excitation wavelength and an optical filter  
13 positioned in an optical path between the broad spectrum light source and the support.

1 42. (New) The apparatus of claim 41, wherein the means for selectively transmitting  
2 excitation light comprises an fiber optic cable.

1 43. (New) The apparatus of claim 40, wherein the means for selectively detecting emission  
2 light comprises a two-dimensional CCD sensor.

1 44. (New) The apparatus of claim 43, wherein the means for selectively detecting emission  
2 light further comprises a sensor filter positioned in an optical path between the two-  
3 dimensional CCD sensor and the support.

1 45. (New) The apparatus of claim 40, further comprising a focusing lens position in an  
2 optical path between the means for selectively detecting and the support.

1 46. (New) The apparatus of claim 45, wherein the focusing lens is an adjustable lens for  
2 selecting an area of the biochip to be detected by the means for selectively detecting  
3 emission light.

1 47. (New) The apparatus of claim 40, wherein the support for holding the at least one biochip  
2 is movable support.

In the Claims:

Please cancel claims 1-19 and add the new claims 20-47 as follows:

- 1      20.    (New) An apparatus comprising:
- 2            a.      means for supporting a first biochip comprising a first array of samples;
- 3            b.      means for generating excitation light to irradiate the first array of samples;
- 4            c.      means for selecting excitation light having a first excitation wavelength; and
- 5            d.      means for selecting a first emission wavelength emitted from a portion of the
- 6                      array of samples resulting from irradiating the first array of samples with
- 7                      excitation light having the first wavelength; and
- 8            e.      means for detecting the first excitation wavelength from the first portion of the
- 9                      first array of samples.
- 1      21.    (New) The apparatus of claim 20, wherein the means for selecting a first emission
- 2                      wavelength comprises a sensor matched filter in an optical path between the means for
- 3                      detecting and the means for supporting the first biochip.
- 1      22.    (New) The apparatus of claim 20, wherein the means for selecting excitation light having
- 2                      a first excitation wavelength is a light source matched filter optically coupled between the
- 3                      means for generating excitation light and the means for supporting.
- 1      23.    (New) The apparatus of claim 20, further comprising a main housing for optically
- 2                      isolating the first biochip and the means for selecting excitation light.
- 1      24.    (New) The apparatus of claim 23, further comprising a camera housing for holding the
- 2                      means for detecting, the camera housing being configured to couple to the main housing



3 with the means for detecting positioned in an optical path between the means for selecting  
4 the first emission wavelength and the means for supporting.

1 25. (New) The apparatus of claim 24, wherein the camera housing is configured to house the  
2 means for selecting the first emission wavelength.

1 26. (New) The apparatus of claim 20, wherein the means for generating excitation light to  
2 irradiate the first array of samples comprises a fiber optic cable.

1 27. (New) The apparatus of 26 wherein the means for generating excitation light further  
2 comprises a laser.

1 28. (New) The apparatus of claim 26, further comprising a main housing for optically  
2 isolating the first biochip, the housing comprising a fiber optic port for directing the fiber  
3 optic cable through the housing.

1 29. (New) The apparatus of claim 26, wherein the fiber optic cable is configured to couple to  
2 single source board spectrum light source.

1 30. (New) The apparatus of claim 20, wherein the means for supporting the first biochip is a  
2 movable drawer structure.

1 31. (New) The apparatus of claim 30, wherein the movable drawer structure is configured to  
2 hold a second biochip comprising a second array of samples.

1 32. (New) The apparatus of claim 20, wherein the means for selecting excitation light is  
2 configured for selecting excitation light having a second excitation wavelength to  
3 irradiate the first array of samples with a second excitation wavelength and wherein the  
4 means for selecting the first emission wavelength is also configured for selecting a second  
5 emission wavelength emitted from a second portion of the first array of samples.

1 33. (New) The apparatus of claim 32, wherein the means for generating excitation light is a  
2 single source board spectrum light source for simultaneously providing the first excitation  
3 wavelength and the second excitation wavelength.

1 34. (New) The apparatus of claim 20, wherein the means for detecting comprises a two-  
2 dimensional charge coupled sensor.

1 35. (New) The apparatus of claim 20, wherein the means for selecting excitation light having  
2 a first excitation wavelength comprises a light source filter in an optical path between the  
3 means for generating excitation light and the means for supporting.

1 36. (New) The apparatus of claim 35, wherein the light source filter is a filter wheel for  
2 selecting a second excitation wavelength.

1 37. (New) The apparatus of claim 20, further comprising a lens positioned in an optically  
2 path between the means for detecting and the means for supporting.

1 38. (New) The apparatus of claim 37, wherein the lens is an adjustable lens to adjust the area  
2 of the biochip detected by the means for detecting.

1 39. (New) The apparatus of claim 20, wherein the means for selecting a first emission  
2 wavelength comprises a sensor filter positioned in an optical path between the means for  
3 detecting and the means for supporting.

1 40. (New) An apparatus comprising;  
2 a. a support for holding at least one biochip having a two-dimensional array of tag  
3 labeled samples;  
4 b. means for selectively transmitting excitation light to the two-dimensional array of  
5 tag labeled samples, the means for selectively transmitting excitation light having  
6 a first excitation wavelength and a second excitation wavelength; and  
7 c. means for selectively detecting emission light having a first emission wavelength  
8 and a second emission wavelength emitted from a first portion and a second  
9 portion of the two-dimensional array of tag labeled samples.

1 41. (New) The apparatus of claim 40, wherein the means for selectively transmitting  
2 excitation light comprises a broad spectrum light source capable of emitting light having  
3 the first excitation wavelength and the second excitation wavelength and an optical filter  
4 positioned in an optical path between the broad spectrum light source and the support.

1 42. (New) The apparatus of claim 41, wherein the means for selectively transmitting  
2 excitation light comprises an fiber optic cable.

1 43. (New) The apparatus of claim 40, wherein the means for selectively detecting emission  
2 light comprises a two-dimensional CCD sensor.

1 44. (New) The apparatus of claim 43, wherein the means for selectively detecting emission  
2 light further comprises a sensor filter positioned in an optical path between the two-  
3 dimensional CCD sensor and the support.

1 45. (New) The apparatus of claim 40, further comprising a focusing lens position in an  
2 optical path between the means for selectively detecting and the support.

1 46. (New) The apparatus of claim 45, wherein the focusing lens is an adjustable lens for  
2 selecting an area of the biochip to be detected by the means for selectively detecting  
3 emission light.

1 47. (New) The apparatus of claim 40, wherein the support for holding the at least one biochip  
2 is movable support.

**REMARKS**

5           The Applicant has amended the claims to capture different aspect of the instant invention.  
The new claims are fully supported by the original disclosure as filed. By way of the above  
amendment, the original claims 1-19 have been canceled and the new claims 19-47 have been  
added.

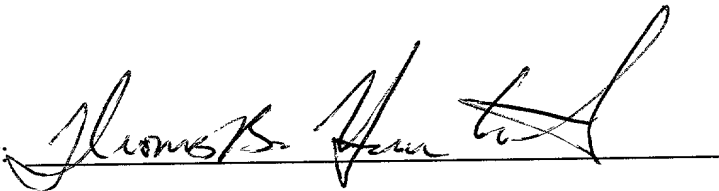
10           No new subject matter has been added by way of this amendment and the applicants  
believe that the claims are in condition for allowance. Should the Examiner have any questions  
or comments, he/she is encouraged to call the undersigned at (650) 833-0160 to discuss the same  
so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

HAVERSTOCK & ASSOCIATES

15  
Dated: 6-15-01

By:



Thomas B. Haverstock

Reg. No. 32,571

Attorneys for Applicant(s)

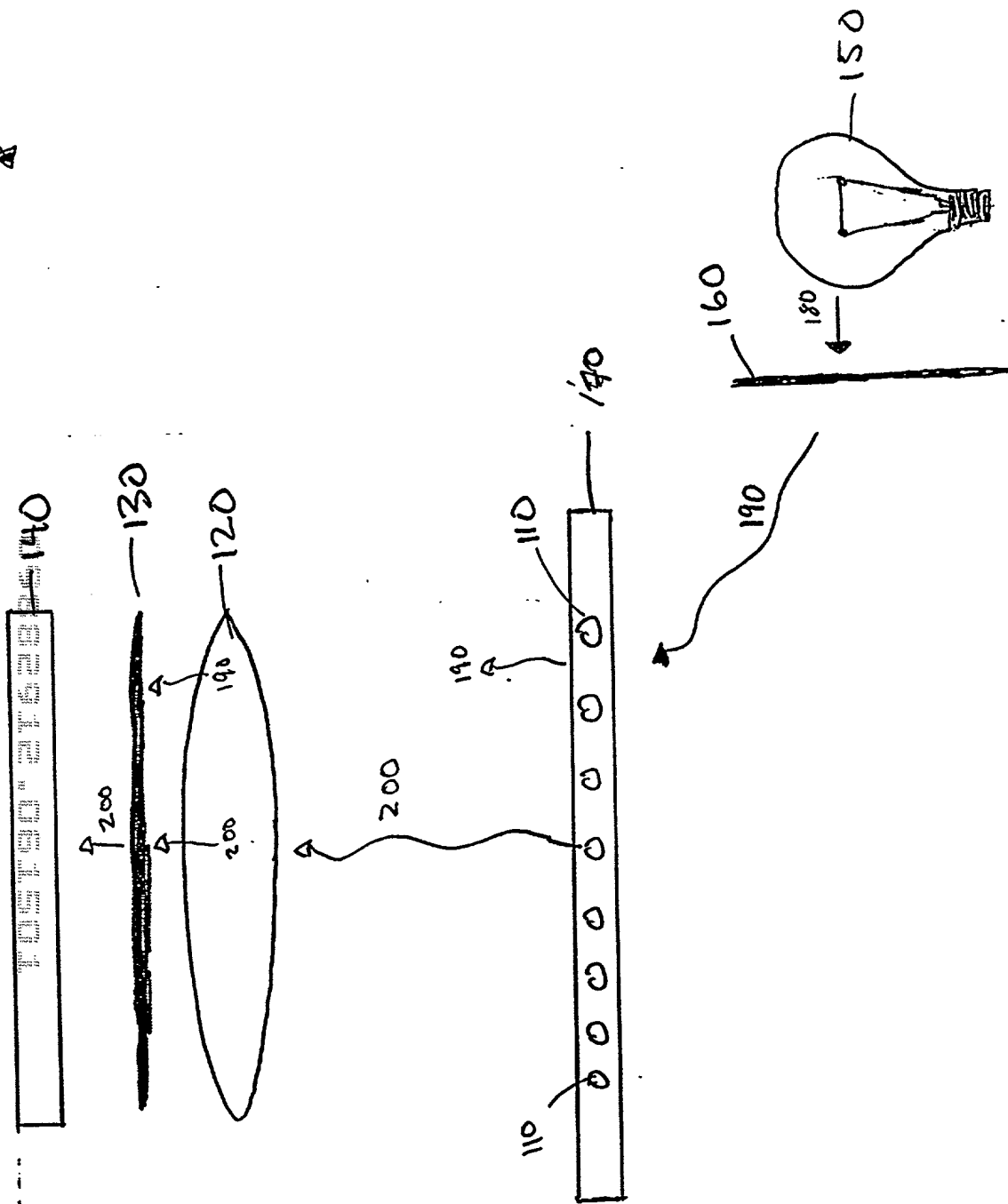


Fig. 1

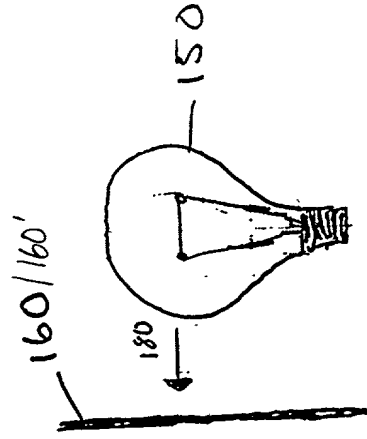
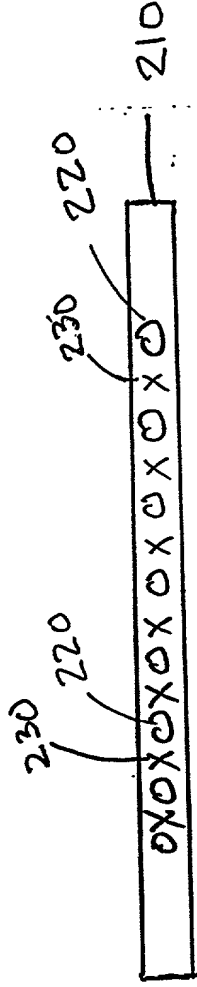
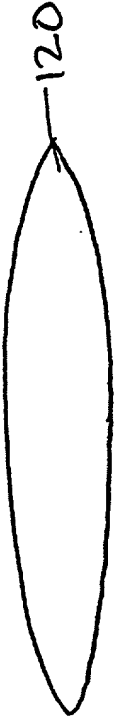
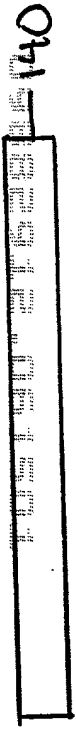


Fig. 2

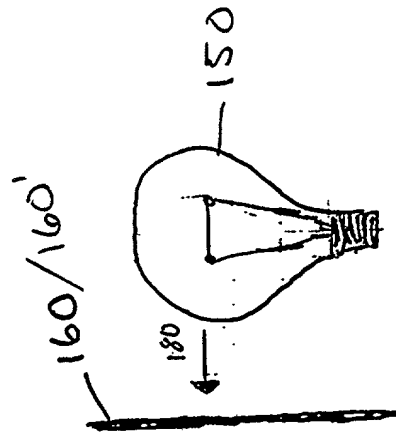
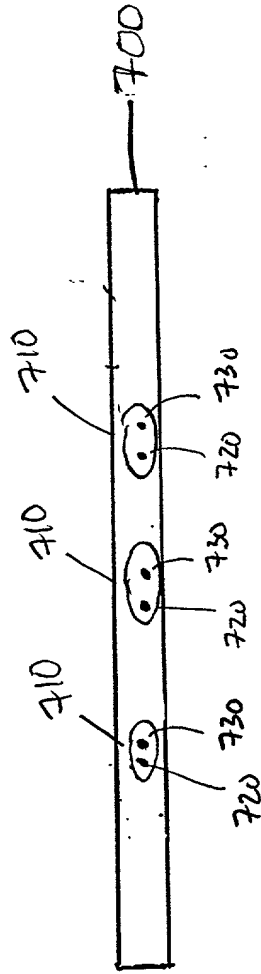
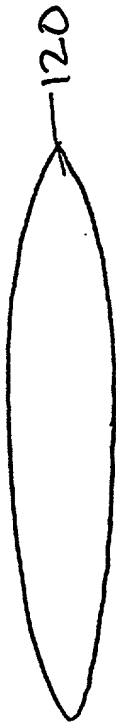
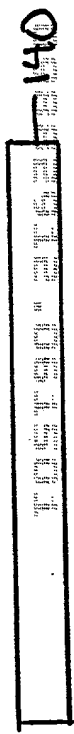


Fig. 3



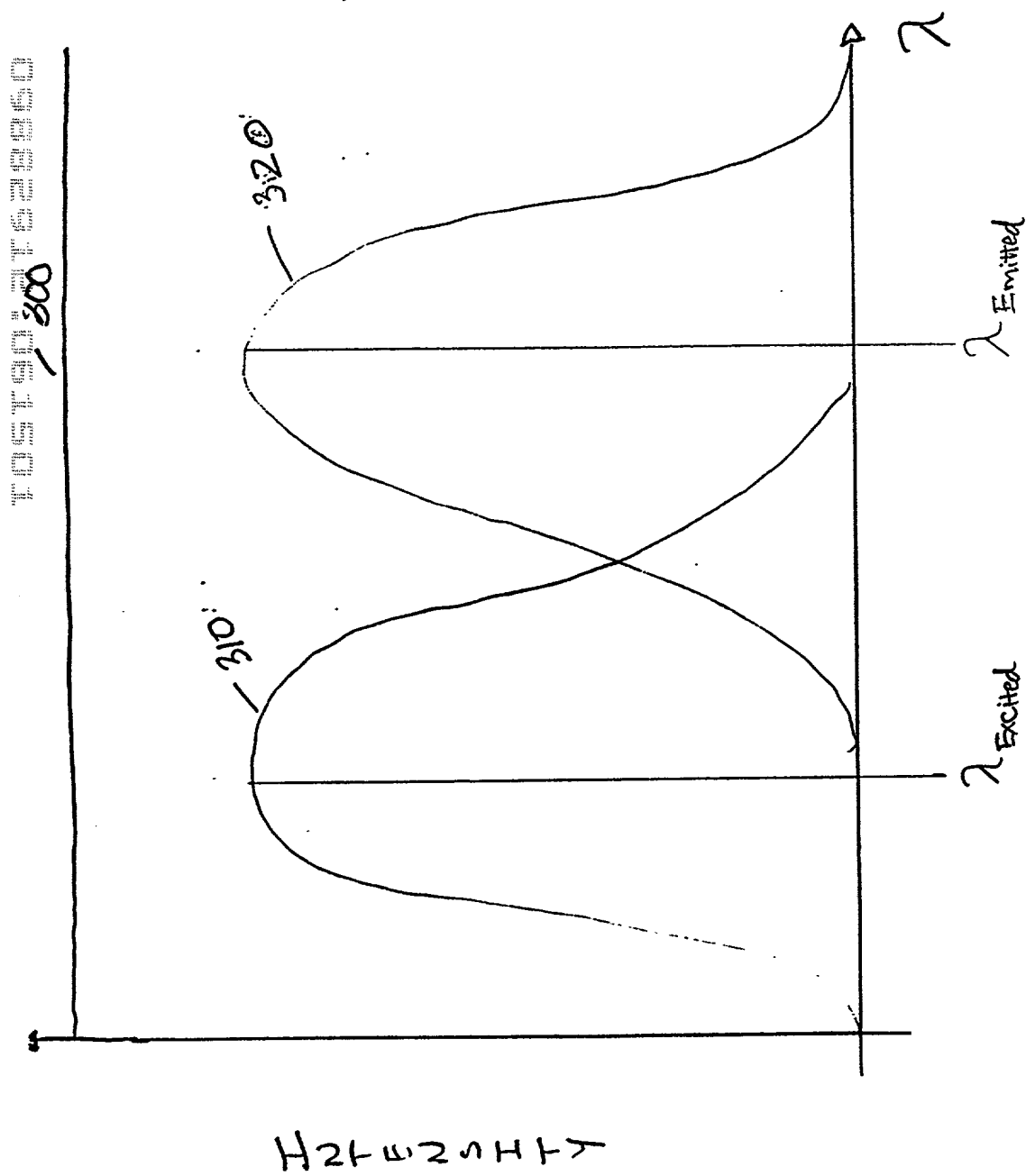


Fig. 4

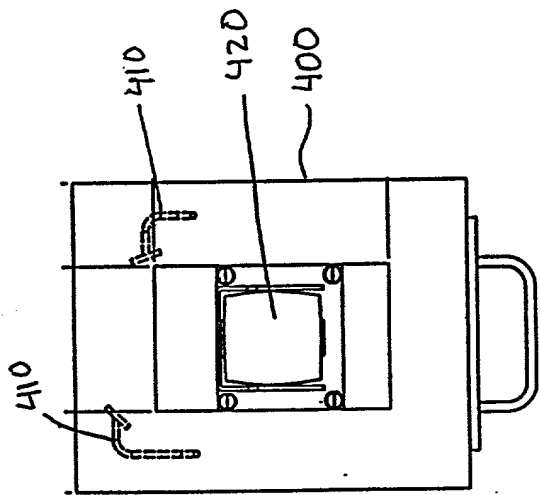


Fig. 5

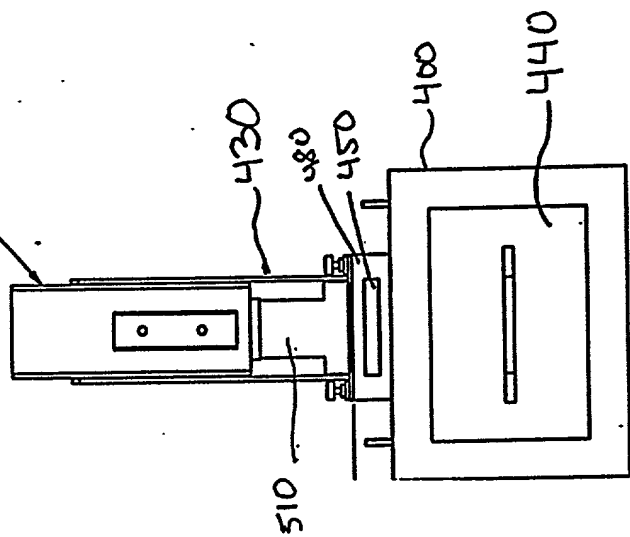


Fig. 6

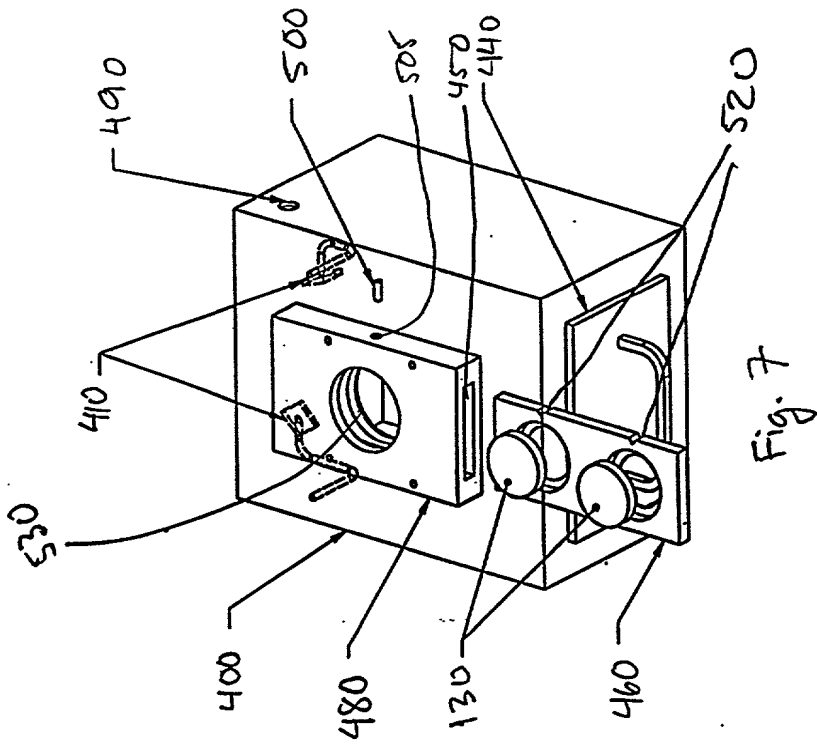


Fig. 7

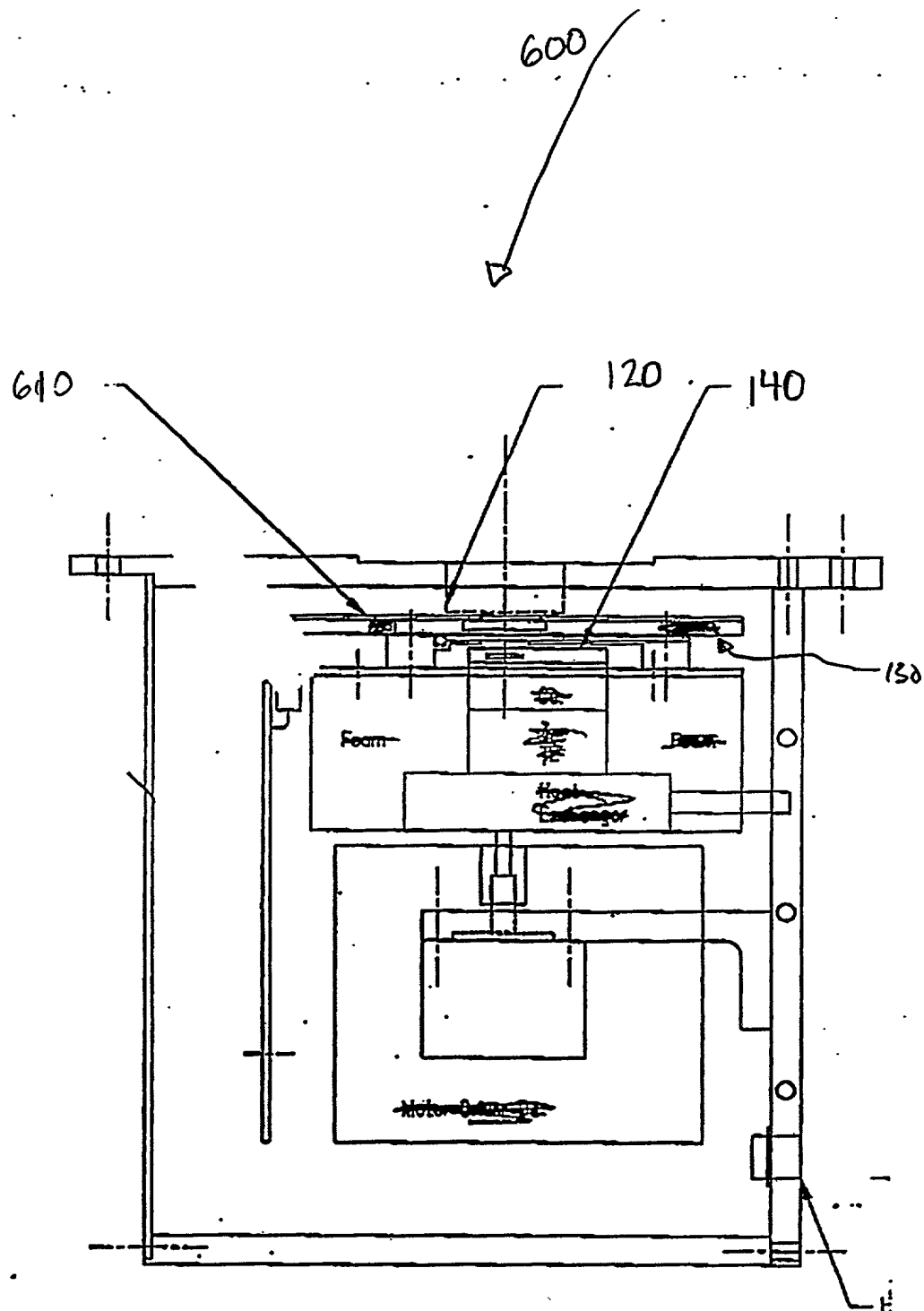


Fig. 8.